Long-term retrospective evaluation of short dental implant success and associated risk factors

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Background: The use of short implants has made a major contribution to the field of implant dentistry and become a new therapeutic option for patients with severely alveolar resorption. Even though the knowledge of clinical outcomes of short implants are gradually increased in recent years, only few studies involving limited number of patients have evaluated the risk factors associated with short implants.

Aim/Hypothesis: The aim of this multicenter study was to conduct a retrospective evaluation of the survival and success rates of short implants and the potential influence of different implant- and patient-related risk factors on the short implant success in a large cohort of patients.

Material and Methods: Through a retrospective chart review of three centers (two university clinics and one private clinic), patient information regarding demographic variables, smoking habit, history of periodontitis, systemic diseases and medications, and parameters for short implants including implant manufacturer, implant design, anatomical location of implant, implant diameter and length, type of implant placement, and survival time were collected and entered into a database. Descriptive statistics and frequency distributions were generated for all demographic variables. For statistical analysis of the data, univariate regression models were used at both implant-level and patient-level. Odd ratios and their 95% confidence interval were calculated. A p value of < 0.05 was considered statistically significant, and all analyses were performed using SSPS Version 20.0.

Results: A total of 460 short implants (344 Straumann, 93 Astra Tech Osseospeed, 12 SGS and 11 MIS implants) placed in 199 patients with follow-up to 9 years (6 to 100 months, average 33.59 ± 24.44 months) were reviewed. The survival rates of short implants were found 95.86% and 92.96% for implant- and patient-based analysis, respectively. The success rates of short implants were found 90% and 83.41% for implant- and patient-based analysis, respectively. The periimplantitis was reported as main cause of the short implant failure (34 46, %73.91). At both the implant- and patient-level, female gender, history of periodontitis and smoking habit found to have significant association with short implant success. The rest of variables neither at the implant- nor the patient-level showed statistically significant correlation with implant success.

Conclusions and Clinical Implications: The results from this study support the use of short implants as a predictable and effective treatment option. However, smoking and periodontitis history have significant negative effect on the success of the short implants. Therefore, the clinicians need to be aware of the potential influence of these risk factors and consider in their treatment provision.